Methods Advancement for Milk Analysis: Successful Inter-Agency and NHEERL Collaborations

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MAMA Study

•A pilot study for the National Children's Study (NCS) and in response to ORD GPRA Goal 4

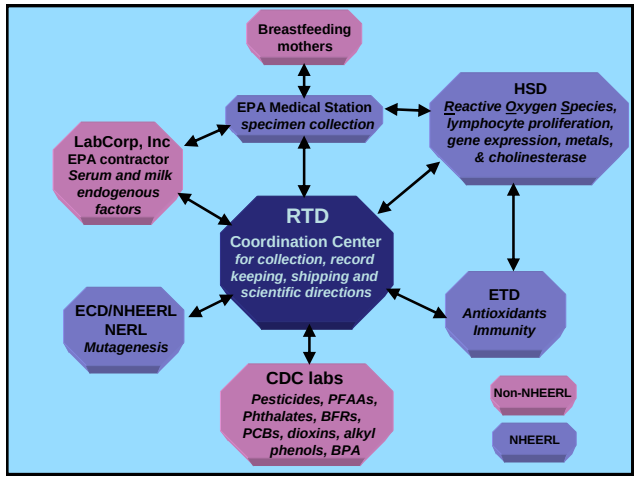
•Women donate milk, urine, saliva, and blood at specified intervals during early lactation

•Samples are analyzed for two classes of components - endogenous (EPA; growth factors and hormones) and exogenous (CDC; common environmental pollutants)

•EPA is measuring endpoints such as immune response, mutagenicity, metabolic enzyme levels, & milk quality

•EPA and CDC partners will compare endpoints between fresh and frozen milk samples, among various fluids collected, and with regard to the subject's questionnaire

Coordination Efforts: Interaction is Key to Success



Recent Activities

2003
MAMA project conceived as collaborative effort and funded within context of National Children's Study pilot research.

Human subjects approval obtained: UNC-Chapel Hill IRB; CDC, and NHEERL/ORD

2004
LabCorp, Inc. contracted for assay validations (competitive contract)

Protocols for specimen collection & preservation finalized

LabCorp finalized validation reports for endogenous assays

Subject recruitment begun

2005
Completion of sample collection and analysis

2006
Final results anticipated

MAMA Study Goals

1) Define collection, preservation, and storage recommendations for human milk samples and confirm lack of contamination from pumps and storage vessels

2) Provide reliable assays to measure defined endogenous and exogenous constituents of fresh and frozen human milk

3) Evaluate blood, saliva, and urine as surrogate media for the analysis of milk constituents

4) Evaluate partitioning and time course of clearance of exogenous milk components

5) Provide validated methods for future studies for use in exploring exposure/response associations

EPA Accomplishments

•Developed a human study in direct response to research needs of the National Children's Study and the World Health Organization's global milk biomonitoring study

•Created collaborations with Center for Disease Control from which these Agencies will contribute reliable and accurate protocols for measurement of exogenous and endogenous agents in breast milk

•Concluded studies assessing the use of commercially available breast pumps for acquiring milk samples, as well as the various storage conditions and preservatives needed for long-term storage

•This research should enable expanded studies designed to monitor chemicals in breast milk including women from geographically dispersed locations, relate endogenous and exogenous components to environmental exposures and search for associations with adverse health outcomes in mothers and infants.

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